

ANTIFREEZE

HAZARDS & RULES

Base Materials - Hazards & Impacts

The main component in most antifreeze is ethylene glycol (or less toxic propylene glycol), which is toxic to humans and deadly to small animals. Ethylene glycol has a sweet taste that may attract unsuspecting animals or children, therefore it is important that you properly handle, store, and dispose of antifreeze.

Additives and Contaminants - Hazards & Impacts

In addition to ethylene glycol (or propylene glycol), virgin antifreeze also consists of corrosion inhibitors and foam controllers. Used antifreeze may also contain heavy metals and other contaminants that are picked up as antifreeze circulates through the engine, particularly in older vehicles that have metal radiators with soldered joints.

Regulatory Overview

Under Indiana's hazardous waste rules, ethylene glycol and propylene glycol (i.e., virgin antifreeze) are not listed hazardous wastes. However, as mentioned above, contact with cooling system parts may cause used antifreeze to become contaminated with heavy metals, such as lead and cadmium. This contamination may make the antifreeze a hazardous waste. Similarly, used antifreeze that is mixed with other wastes (during storage, etc.) may result in a mixture that is a hazardous waste.

Each shop is responsible for making a hazardous waste determination on its used antifreeze. This determination can be based on analytical test results of the used antifreeze, or it may be based on the knowledge of the waste and how it was generated and managed. IDEM has reviewed data on used antifreeze (both ethylene glycol and propylene glycol-based) from a broad range of vehicle types and ages. The results of this data indicated that used antifreeze does not appear to exhibit the characteristics of a hazardous waste. However, you may generate antifreeze that is a hazardous waste if your shop:

- generates used antifreeze primarily from older vehicles (i.e., vehicles with metal radiators and lead soldered joints.)
- generates a type of antifreeze other than traditional ethylene glycol or propylene glycol-based antifreeze.
- mismanages its used antifreeze after it has been drained from the vehicle (i.e., if you mix it with hazardous wastes or other contaminants.)

More information on IDEM's regulatory analysis of used antifreeze may be obtained via IDEM's web site.

MANAGEMENT RESPONSIBILITIES

Regardless of whether or not your used antifreeze is a hazardous waste, there are some regulations you must follow. If your used antifreeze is considered to be a hazardous waste, you must manage it according to the Hazardous Waste Rules. Listed below are the management options that you must follow. Also listed are suggested practices that you should follow in order to ease your regulatory requirements and improve the environmental health of your shop.

You Must:

- regardless of whether or not your used antifreeze is a hazardous waste, you must:
 - not pour antifreeze onto the ground or into streams.
 - not discharge used antifreeze to your Publicly Owned Treatment Works (POTW) without first checking with the POTW to determine if they allow such discharges.
 - not discharge antifreeze to a septic system.
 - if you recycle your antifreeze on-site, you must make a hazardous waste determination on the filters and sludge, or you may simply treat them as hazardous wastes. Because the contaminants are concentrated in the filter and/or sludge, it is likely that these may be hazardous wastes.
- if your used antifreeze is determined to be a hazardous waste, you must:
 - label all containers in accordance with RCRA requirements. Remember to clearly mark the words "HAZARDOUS WASTE" as well as the date the waste began to accumulate (or the date the container was completely filled if you have a satellite accumulation area) on the used antifreeze container. See Section 3.4 for more information.
 - keep storage containers closed to prevent evaporation and spills.
 - conduct weekly inspections to ensure that the containers are in good condition. Look for leaks and for deterioration caused by corrosion or other factors. If a container leaks, put the hazardous waste or the leaking drum in another container.
 - keep monthly records of the amount of used antifreeze that you accumulate (see Section 5.4.)
 - when transporting antifreeze that is considered to be a hazardous waste due to lead contamination, label the shipment as follows: [DOT]
"Lead compounds, soluble, n. o. s., 6.1, UN2291, PGIII, Keep Away From Food"
Note that whenever An. o. s." is part of a shipping name, the description must be immediately followed by a list of those ingredients which produce the hazard.
 - manifest drums of used antifreeze to a TSDR facility (see Section 3.5.)
 - use only permitted waste transporters that have obtained an EPA identification number to transport drums of antifreeze off site.

You Should:

- store new antifreeze in a sealed container and keep it out of reach of animals or children.
- reduce the amount of antifreeze used by replacing antifreeze only when necessary. Visually check for contaminants, and test for freeze point and pH. Fresh antifreeze or corrosion inhibitors can be added to adjust these parameters if necessary.
- reuse good antifreeze that is removed from a vehicle in order to make repairs. Save the antifreeze in a clean container and reuse it in the vehicle after the repairs have been made.
- handle antifreeze carefully to avoid spills. Use catch trays or pans to contain spills. Clean up any spills immediately. See the section entitled, 'In Case of a Spill' for information on whom to contact in the event of a spill and cleanup procedures.
- if your shop works on a large percentage of older vehicles (i.e., those with metal radiators and lead soldered joints) and does not recycle its antifreeze, you should keep the antifreeze from these vehicles separate from the antifreeze removed from newer vehicles. You should make a hazardous waste determination on antifreeze removed from older vehicles or simply manage it as a hazardous waste.
- keep used antifreeze separated from other materials such as used oil or solvent. Mixing these materials may make them non-recyclable, or may make the mixture a hazardous waste.
- recycle your used antifreeze by contracting with a service company to do the recycling or by purchasing equipment to recycle used antifreeze in your shop.
- if your used antifreeze is considered to be a hazardous waste, and you are sending it off-site for recycling or disposal, you should store it in a DOT-approved container. You should also label all containers in accordance with DOT requirements. Note that you will be required to do both of these things prior to shipping your hazardous waste off site.

You Should Consider:

- providing secondary containment such as a diked or bermed area to assist in the recovery of any spilled material.
- contracting with a service company to recycle your used antifreeze (either on- or off-site.)
- purchasing equipment to recycle used antifreeze in your shop.

Information on these antifreeze recycling options is provided below. Note that, whether you choose to contract with a service company or purchase equipment to recycle your antifreeze, you must follow all of the steps listed in the "You Must" section above.

BACKGROUND ON OPTIONS TO CONSIDER

If you are considering recycling your own antifreeze or having an antifreeze recycling company provide you with recycled antifreeze, be aware that many vehicle manufacturers are endorsing their own specific antifreeze formulations and using these formulations in their new vehicles. Replacing the original antifreeze with anything other than the same formulation may violate a vehicle's warranty. Similarly, recycling an antifreeze formulation generally voids its original warranty (some of the newer formulations have a 5-year warranty.)

Depending upon the make and year of the vehicles your shop generally services, you may have limited opportunities to use recycled antifreeze. Weigh this consideration when deciding whether to purchase your own recycling equipment or to contract with a service company.

Purchasing Recycling Equipment

You may purchase antifreeze recycling equipment to do your own recycling on-site. The following two models of antifreeze recycling equipment are available:

Closed-loop/on-vehicle model

The Closed-loop/on-vehicle models are equipped with hoses that attach directly to the vehicle in order to flush the cooling system, recycle the antifreeze and replenish the cooling system. The advantage to this type of system is that the used antifreeze is contained during each step of the process, thereby reducing the possibility for improper handling and storage. Note that closed-loop systems may also be used to recycle antifreeze that will be stored for later use. The disadvantage of this type of system is that the antifreeze is typically recycled through filtration or deionization, which do not remove most dissolved contaminants.

Batch system/off-vehicle model

The second model is the batch system or off-vehicle model which requires that the service technician handle the antifreeze during each step of the process (i.e., drain the antifreeze, pour it into the recycling unit, and then replenish the vehicle.) These types of systems may recycle the antifreeze by filtration or distillation. Distillation units remove suspended solids as well as dissolved contaminants.

Contracting with a Service Company to Recycle Your Used Antifreeze

Contracting this service to an outside company has certain advantages over purchasing your own equipment. First, contracting this service does not require the initial capital expense of purchasing a recycling unit. Secondly, the filters and sludge that are generated during the recycling process may be hazardous wastes. If you recycle on-site, you must make a hazardous waste determination and manage the waste accordingly. If you contract this service to an outside company that recycles your used antifreeze off-site, they will be responsible for the hazardous waste generated during the recycling process.

On-site recycling

Using an on-site mobile antifreeze recycling service involves having a recycling service visit your shop with a mobile coolant recycling unit. Note that your shop will be responsible for any hazardous waste generated as a result of on-site antifreeze recycling. Spent filters and sludge may potentially be hazardous wastes.

Off-site recycling

Another option is to send your used antifreeze off-site for recycling with a reputable recycling company. You may store your used antifreeze on-site for later pick-up.

Recycling companies usually require a minimum pickup quantity of 50-55 gallons and, in addition to picking up used antifreeze, can also supply your shop with recycled antifreeze.

Notes About Antifreeze Recycling

- Check vehicle manufacturers' warranties prior to using recycled antifreeze.
- Chemical additives must be added to the recycled antifreeze prior to its reuse in a vehicle. Recycling equipment vendors provide these additive packages.
- The use of recycling equipment will generate potentially hazardous wastes such as spent filters or sludge. These byproducts should be presumed to be a hazardous waste unless representative sampling is conducted to determine that they are not.
- A list of companies that provide antifreeze recycling services or that lease or sell recycling equipment is included on the IDEM's web site.